Section 9.4 Mechanisms of Plate Motions

(pages 270–271)

This section explains what causes plate motion and the role played by unequal distribution of heat within Earth.

Reading Strategy

Identifying Main Ideas As you read, write the main ideas for each topic. For more information on this Reading Strategy, see the **Reading and Study Skills** in the **Skills and Reference Handbook** at the end of your textbook.

Topic	Main Idea
Slab-pull	a.
Ridge-push	b. mechanism of plate motion in which the force of new crust formed at the high ridges pushes on the plate
Mantle convection	c.

What Causes Plate Motions? (page 270)

1. Circle the letter of the basic force that drives plate tectonics.

a. Earth's magnetic field
b. convection currents in the mantle
c. tidal influence of the moon

2. During convection, warm, less dense material rises and cooler, denser material _____.

3. A _____ is the continuous flow that occurs in a heated fluid because of differences of temperature and density.

Plate Motion Mechanisms (page 271)

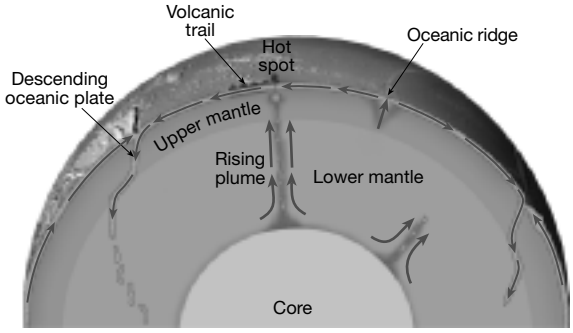
4. Is the following sentence true or false? The mechanism called ridge-push causes oceanic lithosphere to slide down the sides of the oceanic ridge. _____

5. The mechanism that is the main downward component of mantle convection is _____.

6. Is the following sentence true or false? A mantle plume is a rising column of hot rock. _____

7. The feature in the diagram where rock is coolest and most dense is the

a. lower mantle.
b. descending oceanic plate.
c. rising plume.



8. Circle the letter of the statement that best describes the whole-mantle convection model.

a. Rock magnetism changes as rock layers melt under heat and pressure.
b. Hot oceanic lithosphere descends into the mantle, and cold mantle plumes move heat toward the surface.
c. Hot mantle plumes move heat toward the surface.

9. Thermal convection in the mantle is caused by differences in temperature and _____ within Earth.

WordWise

Complete each sentence by using one of the vocabulary terms below.

continental drift	paleomagnetism
convergent boundaries	Pangaea
divergent boundaries	plates
oceanic ridges	subduction zones
	trench

Destructive plate margins called _____ are where one oceanic plate is forced down into the mantle beneath a second plate.

Where two plates collide, _____ occur.

Wegener proposed that in the past, the continents were joined to form a supercontinent he named _____.

_____ occur where two tectonic plates move away from each other.

An ocean _____ is a surface feature produced by a descending plate.

Wegener's _____ hypothesis proposed that the continents changed position on Earth's surface.

A record of _____ is preserved in the sequence of rock strips at oceanic ridges.

Earth's lithosphere is divided into _____ that move and change shape.

Elevated areas of the seafloor called _____ occur along well-developed divergent plate boundaries.